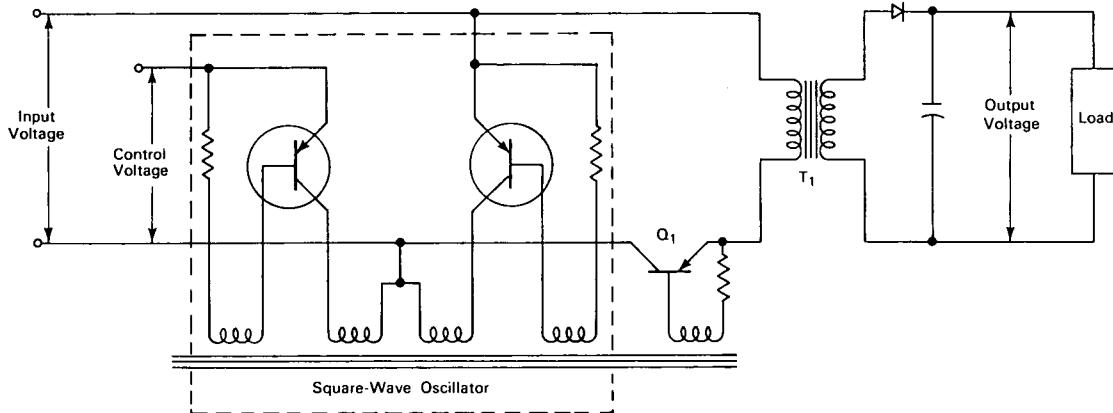


# NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

## Transistorized Converter Provides Nondissipative Regulation



**The problem:** Efficient conversion of fluctuating input voltages to a constant output voltage avoiding the weight and size problems associated with the use of saturable reactors.

**The solution:** A transistorized regulator converter that is nondissipative in operation and functions in an open loop through variable duty cycles.

**How it's done:** A square-wave oscillator that is essentially a magnetically coupled multivibrator functions as a low-power driver circuit that switches  $Q_1$  on and off. The time duration of alternate half cycles of the oscillations are not necessarily equal, the length of one half cycle being determined by the magnitude of the input voltage while the length of the alternate half cycle is determined by the magnitude of the control voltage. The relationship between the input voltage and the control voltage and the time duration of the alternate cycles produces the inherent open-loop regulation of this circuit. As  $Q_1$  is alternately switched on and off, it causes the input voltage to be impressed

across the primary winding of  $T_1$ . With the control voltage held constant, the output voltage is also constant despite changes in the magnitude of the input voltage to the converter.

### Notes:

1. The illustrated circuit is one basic embodiment of principles which lend themselves to a variety of circuit configurations for varying requirements such as fluctuating loads and selected power levels.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Goddard Space Flight Center  
Greenbelt, Maryland, 20771  
Reference: B64-10305

**Patent status:** NASA encourages use of this innovation. No patent action is contemplated.

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